WHAT IS CLAIMED IS:

1. An optical disk device, comprising a radiation light source, an objective lens, an optical splitter, and a photodetector,

wherein light emitted from the radiation light source passes through the objective lens to be focused on a signal plane of an optical disk;

light reflected by the signal plane passes through the objective lens to enter the optical splitter;

the optical splitter is divided into four quadrants *Ak* (wherein $k = 1, 2, 3, 4$) by two straight lines (a *y*-axis parallel with an optical disk radial direction and an *x*-axis orthogonal thereto) that intersect with an optical axis;

the photodetector is divided into at least four regions *Bk*;

first-order diffracted lights *ak* are derived from light that has entered the quadrants *Ak* by the optical splitter and are projected on the regions *Bk* of the photodetector, respectively;

sections of the first-order diffracted lights a2 and a3 taken along the *x*-axis lie approximately on a boundary between the regions B2 and B3; and

the first-order diffracted lights a1 and a4 are distributed on the photodetector apart from each other.

2. The optical disk device according to claim 1, wherein a tracking error signal *TE* with respect to the optical disk is generated according to a formula of $TE = C1 - C4 - (C2 - C3) / m$, where *Ck* denotes a signal detected in the region *Bk* (wherein $k = 1, 2, 3$, or 4), and *m* indicates a value of 1 or higher.

3. The optical disk device according to claim 1, wherein minus first-order diffracted lights *ak'* (wherein $k = 1, 2, 3, 4$) are derived from light that has entered the quadrants *Ak* by the optical splitter, the minus first-order diffracted light a2' is focused on a detection plane without being inverted with respect to a substantial *y*-axis direction, and the minus first-order diffracted light a3' is inverted with respect to the substantial *y*-axis direction to be focused on the detection plane.

4. An optical disk device, comprising a first radiation light source, a second radiation light source, an objective lens, an optical splitter, and a

photodetector,

wherein the first and second radiation light sources are disposed on the photodetector;

light emitted from the first radiation light source passes through the objective lens to be focused on a signal plane of a first optical disk;

light reflected by the signal plane passes through the objective lens to enter the optical splitter;

the optical splitter is divided into four quadrants Ak (wherein $k = 1, 2, 3, 4$) by two straight lines (a y-axis parallel with an optical disk radial direction and an x-axis orthogonal thereto) that intersect with an optical axis;

the photodetector is divided into at least four regions Bk;

first-order diffracted lights ak are derived from light that has entered the quadrants Ak by the optical splitter and are projected on the regions Bk of the photodetector, respectively;

light that is emitted from the second radiation light source and has a different wavelength from that of the light emitted from the first radiation light source passes through the objective lens to be focused on a signal plane of a second optical disk; and

light reflected by the signal plane of the second optical disk passes through the objective lens to enter the optical splitter, and first-order diffracted lights bk are derived from light that has entered the quadrants Ak by the optical splitter and are projected on the regions Bk of the photodetector, respectively.

5. The optical disk device according to claim 4, wherein sections of the first-order diffracted lights a2 and a3, or b2 and b3 taken along the x-axis lie approximately on a boundary between the regions B2 and B3, and the first-order diffracted lights a1 and a4, or b1 and b4 are distributed on the photodetector apart from each other.

6. The optical disk device according to claim 4, wherein a tracking error signal TE with respect to the first or second optical disk is generated according to a formula of $TE = C1 - C4 - (C2 - C3) / m$, where Ck denotes a signal detected in the region Bk (wherein $k = 1, 2, 3$, or 4), and m indicates a value of 1 or higher.

7. The optical disk device according to claim 4, wherein minus first-order diffracted lights *ak'* or *bk'* (wherein $k = 1, 2, 3, 4$) are derived from light that has entered the quadrants *Ak* by the optical splitter, the minus first-order diffracted light a2' or b2' is focused on a detection plane without being inverted with respect to a substantial *y*-axis direction, and the minus first-order diffracted light a3' or b3' is inverted with respect to the substantial *y*-axis direction to be focused on the detection plane.

8. An optical disk device, comprising a first radiation light source, a second radiation light source, an objective lens, an optical splitter, and a photodetector,

wherein the optical splitter has a configuration with a birefringent medium having a periodic concave-convex cross-section;

light having a wavelength $\lambda 1$ emitted from the first radiation light source enters the optical splitter to be converted into light having a phase difference of about $2n\pi$ (where n is an integral number other than zero) periodically;

the light passes through the objective lens to be focused on a signal plane of a first optical disk;

light reflected by the signal plane passes through the objective lens and then enters the optical splitter to be converted into light having a phase difference of about $2n\pi+\alpha$ (where α denotes a real number other than zero) periodically, and diffracted light derived from the light enters the photodetector to be detected;

light having a wavelength $\lambda 2$ emitted from the second radiation light source enters the optical splitter to be converted into light having a phase difference of about $2n\pi\lambda 1/\lambda 2$ periodically;

the light passes through the objective lens to be focused on a signal plane of a second optical disk;

light reflected by the signal plane of the second optical disk passes through the objective lens and then enters the optical splitter to be converted into light having a phase difference of about $(2n\pi+\alpha)\lambda 1/\lambda 2$ periodically; and

diffracted light derived from the light enters the photodetector to be detected.

9. An optical splitting device, comprising a first radiation light source,

a second radiation light source, an objective lens, an optical splitter, and a photodetector,

wherein the optical splitter has a configuration with a birefringent medium having a periodic concave-convex cross-section;

light having a wavelength $\lambda 1$ emitted from the first radiation light source enters the optical splitter to be converted into light having a phase difference of about $2n\pi$ (where n is an integral number other than zero) periodically;

the light passes through the objective lens to be focused on a signal plane of a first optical disk;

light reflected by the signal plane passes through the objective lens and then enters the optical splitter to be converted into light having a phase difference of about $2n\pi+\alpha$ (where α denotes a real number other than zero) periodically, and diffracted light derived from the light enters the photodetector to be detected;

light having a wavelength $\lambda 2$ emitted from the second radiation light source enters the optical splitter to be converted into light having a phase difference of about $2n\pi\lambda 1/\lambda 2$ periodically;

the light passes through the objective lens to be focused on a signal plane of a second optical disk;

light reflected by the signal plane of the second optical disk passes through the objective lens and then enters the optical splitter to be converted into light having a phase difference of about $(2n\pi+\alpha)\lambda 1/\lambda 2$ periodically; and

diffracted light derived from the light enters the photodetector to be detected.